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EXAMINER

BAKER, STEPHEN M

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,455

Applicant(s)

FOISY ET AL.

Examiner

Stephen M. Baker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 and 53-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29, 32-51 and 53-63 is/are rejected.
- 7) ☒ Claim(s) 30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 3, in lines 8-15, "Accordingly" in "Information additive coded information ... exhibits the unique property that any coded segment can be used to recover the original source data. Accordingly, a receiver in such a system need only receive some threshold amount of the coded data" is apparently a non-sequitur, as the latter property apparently does not follow from the former, and thus apparently should be deleted.

On page 23, in line 16, "blocks" (both occurrences) apparently should be "subblocks" for consistency.

Appropriate correction is required.

Claim Objections

2. Claims 14, 20, 27, 29, 38 and 53 are objected to because of the following informalities:

In claim 14, lines 7-8, "codes ... is" is apparently not grammatically consistent.

In claim 20, lines 16 and 17, "T₁ blocks" apparently should be "T₁ subblocks" for consistency.

In claim 27, lines 5-6, "codes ... is" is apparently not grammatically consistent.

In claim 29, lines 11-12, "the static decoder, in response, producing a second set of input symbols in response" is poorly worded and apparently should be "the static decoder producing a second set of input symbols in response."

In claim 38, line 8, "codes ... is" is apparently not grammatically consistent.

In claim 53, lines 6-7, "symbols ... is" is apparently not grammatically consistent.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9-13, 16-20, 24-26, 47, 48, 55, 56, 59 and 60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 9 and 17, line 4, "store source of source data" apparently should be "store segments of source data."

In claims 12 and 24, lines 3-4, "modulate the information additive code onto a carrier signal, the carrier signal embodying the information additive code comprising a coded transmission" appears to be inconsistent and apparently should be "modulate the information additive code onto a carrier signal, the carrier signal as modulated by the information additive code comprising a coded transmission" or the like.

In claim 16, "a sequence of static encoding keys *corresponding to* the sequence of input symbols" and "a sequence of dynamic encoding keys *corresponding to* the

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sequence of input symbols" appear to be misdescriptive and inconsistent with the base claim's recitation of "independent" information additive codes and the implicit suggestion therein that the key sequences have properties generally associated with randomness.

In claims 47, 48, 55, 56, 59 and 60, "corresponding to" (every occurrence) appears to be misdescriptive and inconsistent with the base claim's recitation of "independent" information additive codes and the implicit suggestion therein that the key sequences have properties generally associated with randomness.

Claim Rejections - 35 USC § 101

5. Claims 53-56 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

A signal *per se*, such as a "transmission," is considered to be intangible and thus non-statutory subject matter under 35 U.S.C. 101.

Allowable Subject Matter

6. The indicated allowability of claims 16, 29, 48, 51, 56, 60 and 63 is withdrawn in view of the newly discovered references to Schreiber *et al* and Butterfield *et al*.

Rejections based on the newly cited references follow.

7. Claims 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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8. Claims 11, 19 and 20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 7, 8, 14, 15, 24, 26, 27, 35, 38-42, 45-47, 49, 50 and 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,425,050 to Schreiber *et al* (hereafter "Schreiber").

Schreiber discloses arrangements for encoding and decoding a television signal for broadcasting to plural receivers using coding techniques of FEC, spectrum-spreading and OFDM . Schreiber thus discloses arrangements for encoding, broadcasting, and decoding an "information additive code." A PN sequence generator for spectrum spreading in Schreiber's system operates such that "the information additive code transmitted ... at any particular time is independent of the information additive code previously received," as the PN sequences are pseudo-random. The PN data for each transmission symbol in Schreiber's system also serves as a "decoding key." Schreiber's encoder and decoder are "multistage," and thus include a "single stage," as shown by Schreiber's Figs. 6 and 7 and Schreiber's Fig. 9.

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11. Claims 1, 7, 12-14, 16, 38-42, 45-49 and 53-56 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,917,852 to Butterfield *et al* (hereafter "Butterfield").

Butterfield discloses arrangements for encoding and receiving a subscriber signal for wireless transmission using coding techniques of variable FEC, scrambling and direct-sequence spectrum-spreading. Butterfield thus discloses arrangements for encoding, broadcasting and decoding an "information additive code." A scramble pattern generator for spectrum spreading in Butterfield's system operates such that "the information additive code transmitted ... at any particular time is independent of the information additive code previously received," as the scramble patterns are pseudo-random. Butterfield's encoder, and presumably the corresponding decoding, are "multistage," and thus include a "single stage." With reference to Butterfield's Fig. 11, a puncture and sync insertion unit (54) serves as a "static key" generator for a "static encoder" (48, 50, 52, 54), and units for scrambling and spreading (62, 64, 66, *etc.*) the punctured code serve as a "dynamic key" generator for a "dynamic encoder (58, 60, 68, 70, 72, 74, 76, 78).

Claim Rejections - 35 USC § 103

12. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

13. Claims 2, 3, 27-29, 35, 37, 49-51 and 57-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butterfield.

Regarding claims 57-63, Butterfield does not disclose a software implementation of all the logic operations used in encoding and in decoding. Official Notice is given that the advantages of implementing logical operations by means of program instructions were well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the logical operations of encoding and decoding in Butterfield's system by means of program instructions. Such an implementation would have been obvious because the advantages of implementing logical operations by means of program instructions were well known.

Regarding claims 2, 3, 27-29, 35, 37, 49-51 and 61-63, Butterfield does not show implementations for performing the descrambling and decoding in each receiver. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the logical operations of decoding in Butterfield's system by using descrambler logic followed by depuncturing and convolutional code decoding logic. Such an implementation would have been obvious because it would simply reverse the encoding and scrambling processes in the conventional manner. In such an implementation, the scramble pattern for each transmission symbol would serve as a "dynamic key" for a de-scrambler serving as a "dynamic decoder," and the de-puncturing pattern for each transmission symbol would serve as a "static key" for a depuncturer/convolutional code decoder serving as a "static decoder."

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14. Claims 1, 2, 4-6, 8-10, 12-14, 17, 18, 21, 24, 25, 27, 28, 32, 35, 36, 38-47, 49, 50, 53-55, 57-59, 61 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,278,716 to Fischer *et al* (hereafter "Fischer").

Regarding claims 1, 6, 8, 14, 27, 38, 41, 42, 45, 49, 57 and 61: Fischer discloses arrangements for encoding $n > k$ coded packets from k file data packets using a host computer program and one-way satellite broadcasting the n encoded packets to plural subscriber computers, wherein each subscriber computer is programmed to reconstruct the original k file data packets using k received coded packets, regardless of which k coded packets are received. The file may be broken into chunks, with each chunk providing k data packets. Fischer's packet overhead also includes packet sequence numbers. Fischer thus discloses arrangements for encoding, satellite broadcasting, and decoding an "information additive code" (*i.e.* a packet erasure correction code and a other packet overhead data) comprising one or more encoded chunks.

Fischer does not disclose coding the packets such that "the information additive code transmitted ... at any particular time is independent of the information additive code previously received." Official Notice is given that the advantages of encrypting or scrambling packet data, which modulates the data pseudo-randomly and thus makes data symbols "independent" from each other, were well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to enhance Fischer's system by encrypting or scrambling the packet data. Such enhancement would be obvious because the advantages of encrypting or scrambling packet data were already well known.

Regarding claim 2: Fischer's encoder and decoder are not "multi-stage" and thus must be considered "single stage".

Regarding claims 12, 13, 24, 25, 35, 36 and 53: Fischer's transmission and reception via satellite of course requires satellite signal carrier modulation and demodulation.

Regarding claims 39, 46, 54 and 58: Fischer's data file before encoding is of course "source data" that has been "arranged" forming an "ordered sequence".

Regarding claims 4, 21, 32, 43 and 44: although Fischer discloses that the host computer (11) may be extended with a transmission communication device (13) for the transfer of encoded data via cable to a satellite uplink transmitter (14), Fischer does not describe a "protocol converter" for generating the satellite uplink data. Official Notice is given that the utility of converting a computer communication protocol into a satellite broadcast protocol, for the transmission of computer data files by satellite, was widely known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Fischer's connection between the host and the satellite uplink using a protocol conversion processing. Such an implementation would have been obvious because the utility of converting a computer communication protocol into a satellite broadcast protocol, for the transmission of computer data files by satellite, was already widely known. Such an implementation would presumably involve a complementary conversion from the satellite protocol at the subscriber-side.

Regarding claim 5: although Fischer discloses that the subscriber computer (20) may be a PC, Fischer does not describe a "secondary channel" for the subscriber computers. Official Notice is given that the utility of providing a PC with numerous "channels", e.g. a dial-up modem, an ethernet card and a wireless networking card, was widely known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Fischer's subscriber PCs with a secondary channel. Such an implementation would have been obvious because the utility of providing a PC with numerous "channels", e.g. a dial-up modem, an ethernet card and a wireless networking card, was already widely known.

Regarding claims 9, 10, 17 and 18: Fischer's encoder is embodied by software on a general-purpose computer, the general-purpose computer presumably have a "cache unit" and a "control unit" coupled to the cache and to a software instruction processing unit, for coordinating the transfer of data between the cache and the software instruction processing unit during encoding, thereby "commanding" the transfer of data to the software instruction processing unit. Furthermore, such cache would inevitably provide "segment buffers" in storing the units of data to be encoded, would inevitably involve an "upload" unit for loading the data to be encoded into the cache, and would inevitably involve a "command port" to receive the cache control commands. Fischer doesn't discuss the internal details of the programmed computer, and thus doesn't disclose a controlled cache. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Fischer's

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encoder with a "cache unit" and a "control unit" functioning as recited in the claims.

Such an implementation would have been obvious because Fischer's encoder is embodied by software on a general-purpose computer, and because a general-purpose computer typically has a controlled cache.

Regarding claims 28, 40, 47, 50, 55, 59 and 62: Fischer's packets include sequence numbers that are isolated (re-generated) for use in decoding, serving as "decoding keys".

15. Claims 1, 2, 4-10, 12-14, 17, 18, 21-28, 32-47, 49, 50, 53-55, 57-59, 61 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,081,907 to Witty *et al* (hereafter "Witty").

Regarding claims 1, 6, 14, 27, 38, 41, 42, 45, 49, 57 and 61: Witty discloses arrangements for encoding $n > k$ coded packets from k file data packets using a host computer program and satellite broadcasting the n encoded packets to plural client computers, wherein each client computer is programmed to reconstruct the original k file data packets using k received coded packets, regardless of which k coded packets are received. The file may be broken into groups, with each group providing k data packets. Witty's packet overhead also includes packet sequence numbers. Witty thus discloses arrangements for encoding, satellite broadcasting, and decoding an "information additive code" (*i.e.* a packet erasure correction code and other packet overhead) comprising one or more encoded groups.

Witty does not disclose coding the packets such that "the information additive code transmitted ... at any particular time is independent of the information additive

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code previously received.” Official Notice is given that the advantages of encrypting or scrambling packet data, which modulates the data pseudo-randomly and thus makes data symbols “independent” from each other, were well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to enhance Witty’s system by encrypting or scrambling the packet data. Such enhancement would be obvious because the advantages of encrypting or scrambling packet data were already well known.

Regarding claim 2: Witty’s encoder and decoder are not “multi-stage” and thus must be considered “single stage”.

Regarding claims 4, 21, 32, 43 and 44: Witty discloses that, on the sending side, data received at a bridge-router (32) is converted from the packet format of the network (28) to a format appropriate for the broadcast network (30), thus indicating a “protocol converter” operation by the bridge-router.

Regarding claim 5: Witty discloses a modem (78) providing a “secondary channel” for the client computers.

Regarding claims 7, 8, 26 and 37: Witty discloses that the broadcast network medium can alternatively be radio (terrestrial) or cable (col. 3, lines 33+).

Regarding claims 12, 13, 24, 25, 35, 36 and 53: Witty’s transmission and reception via satellite of course requires satellite signal carrier modulation and demodulation.

Regarding claims 22, 23, 33 and 34: the protocol used by Witty’s network (28) can be IP (col. 3, line 24).

Regarding claims 28, 40, 47, 50, 55, 59 and 62: Witty's packets include sequence numbers that are isolated (re-generated) for use in decoding, serving as "decoding keys".

Regarding claims 39, 46, 54 and 58: Witty's data file before encoding is of course "source data" that has been "arranged" forming an "ordered sequence".

Regarding claims 9, 10, 17 and 18: Witty's encoder is embodied by software on a general-purpose computer, the general-purpose computer presumably have a "cache unit" and a "control unit" coupled to the cache and to a software instruction processing unit, for coordinating the transfer of data between the cache and the software instruction processing unit during encoding, thereby "commanding" the transfer of data to the software instruction processing unit. Furthermore, such cache would inevitably provide "segment buffers" in storing the units of data to be encoded, would inevitably involve an "upload" unit for loading the data to be encoded into the cache, and would inevitably involve a "command port" to receive the cache control commands. Witty doesn't discuss the internal details of the programmed computer, and thus doesn't disclose a controlled cache. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Witty's encoder with a "cache unit" and a "control unit" functioning as recited in the claims. Such an implementation would have been obvious because Witty's encoder is embodied by software on a general-purpose computer, and because a general-purpose computer typically has a controlled cache.

Response to Arguments

16. Applicant's arguments filed 28 July 2005 have been fully considered but they are not persuasive.

Applicant argues that erasure-correcting and error-correcting codes are not "information additive" as such codes only add redundancy. For applicant's argument to be persuasive, it would have to be the case that every erasure-correcting and error-correcting code encoding would produce the same redundant data bits, and such is not the case.

Conclusion


17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Stephen M. Baker
Primary Examiner
Art Unit 2133

smb